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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
AHN, SAM K	

ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/886,944	MULLER ET AL.	
	Examiner	Art Unit	
	Sam K. Ahn	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *pre-amendment, received on 6/21/01*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *33-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *33-45 and 51-63* is/are rejected.

7)☒ Claim(s) *46-50 and 64-68* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *011402*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The elements in Figs. 1,7,9 and 10 need to have descriptive label in conformance with 37 CFR 1.84(n) and 1.84(o). For example, a descriptive label of "delay" should be inserted into 16 of Fig.10 to properly describe element of delay.

Specification

2. For the formality of the application under the present office practice, applicant(s) is required to replace "Claims" with "I or We Claim", "The Invention Claimed Is" (or the equivalent) before the Claims part of the specification of the instant application. See MPEP 608.01(m).

Claim Objections

3. Claims 33-68 are objected to because of the following informalities:

In claim 33, line 3, delete "means" and insert "analog signal processing means".

In claim 33, line 4, delete "input signal" and insert "input frequency signal".

In claim 33, line 6, delete "means" and insert "digital signal processing means".

In claim 33, lines 7 and 9, respectively, delete "input signal" and insert "input frequency signal".

In claim 33, line 10, delete "means" and insert "combining means".

In claim 34, line 3, delete "the filter" and insert "the FIR filter".

In claim 34, line 3, delete "output of the filter" and insert "output of the FIR filter".

In claim 35, line 1, delete "the filer" and insert "the FIR filter".

In claim 36, line 1, delete "characteristic" and insert "characteristic of".

In claim 37, line 1, delete "the filter" and insert "the FIR filter".

In claim 38, line 1, delete "the filter" and insert "the FIR filter".

In claim 41, line 1, delete "the converters" and insert "the analog-to-digital and digital-to-analog converters".

In claim 41, line 1, delete "the filter" and insert "the FIR filter".

In claim 44, line 1, delete "comprising analog" and insert "comprising an analog".

In claim 45, line 2, delete "input signal" and insert "input frequency signal".

In claim 47, line 2, delete "the converter" and insert "the analog-to-digital converter".

In claim 47, line 3, delete "a channel" and insert "the equivalent channel".

In claim 47, line 3, delete "a scanning" and insert "the scanning".

In claim 49, line 2, delete "the converter" and insert "the analog-to-digital converter".

In claim 49, line 2, delete "the filter" and insert "the FIR filter".

In claim 50, line 2, delete "the converter" and insert "the analog-to-digital converter".

In claim 50, lines 2-3, delete "the converter" and insert "the analog-to-digital converter".

In claim 51, lines 3,5 and 8, delete "input signal" and insert "input frequency signal".

In claims 52,53,54,55,56,59 and 67, lines 3 and 3,1,1,1,1,1 and 2, respectively, delete "the filter" and insert "the FIR filter".

In claims 53,62 and 63 lines 2,2 and 2, respectively, delete "input signal" and insert "input frequency signal".

In claim 54, line 1, delete "characteristic" and insert "characteristic of".

In claims 55 and 59, line 1, respectively, delete "the converters" and insert "the analog-to-digital and digital-to-analog converters".

In claim 62, line 1, delete "step of" and insert "step of analog".

In claim 65, line 2, delete "connected to the" and insert "connected to the analog-to-digital".

In claim 65, line 3, delete "a channel" and insert "the equivalent channel".

In claim 65, line 3, delete "a scanning" and insert "the scanning".

In claims 67 and 68, line 2, respectively, delete "the converter" and insert "the analog-to-digital converter".

Claims 39,40,42,43,46,48,57,58,60,61,64 and 66 directly or indirectly depend on claim 33 or 51. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 35 and 53 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. . In claims 35 and 53, lines 2, respectively, recite "executing a si(x) compensation". The specification does not describe the compensating function of the si(x) compensation in such a way as to enable one skilled in the art to make and/or use the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 33-34,36-43,51-52 and 54-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross et al., GB 2,222,733 A, cited in IDS, (Ross) in view of Dick et al., USP 6,600,788 B1, (Dick).

Regarding claims 33 and 51, Ross discloses a method and a device for processing an input frequency signal (see Fig.2), comprising: a power limiter including

a) analog signal processing means (18) in a first signal path of the power limiter for analog signal processing of the input signal to generate a first processed signal at an output of the first signal path;

b) digital signal processing means (20 - wherein the elements of Fig.1 is equivalent to the digital filter) in a second signal path of the power limiter for digital signal processing of the input signal to generate a second processed signal at an output of the second signal path; and

c) combining means (22) at the outputs of the first and second signal paths, for combining the first and second processed signals.

However, Ross does not explicitly teach wherein the digital signal processing means include function for selective suppression of specific frequency regions in the input signal. Dick teaches analog-to-digital converter (11) and sigma-delta modulation (12) coupled to a digital filter (13), (see Fig.1). Dick teaches wherein the receiving signals are converted to digital form, further quantized and then filtered in a bandpass FIR filter. (note col.3, lines 17-29) Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Ross's digital filter coupled to ADC, and DAC, to suppress specific frequency, as taught by Dick of having a bandpass FIR filter for the purpose of suppressing any unwanted frequency range in a signal.

Regarding claims 34 and 52, Ross in view of Dick teach all subject matter claimed, as applied to claim 33 or 51. Ross further teaches wherein the digital

signal processing means (see Fig.1) includes a filter (12), an analog-to-digital converter (10) at an input to the filter, and a digital-to-analog converter (14) at an output of the filter. However, Ross does not explicitly teach wherein the filter is a finite impulse response (FIR) filter. As explained above, Dick teaches wherein the filter is an FIR filter. Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Ross' teaching of the filter with the FIR filter taught by Dick for the purpose of stabilizing the system wherein the FIR filters are well-known not to have any poles, and thus are unconditionally stable.

Regarding claim 36 and 54, Ross in view of Dick teach all subject matter claimed, as applied to claim 34 or 52. Dick further teaches wherein the FIR filter has a response characteristic of having steep sides. (see Fig.5c)

Regarding claim 37 and 55, Ross in view of Dick teach all subject matter claimed, as applied to claim 34 or 52. As previously explained, Ross in view of Dick teach wherein the converter and the FIR filter operate in a series (as shown in Fig.1 of Ross). Regarding the limitation of the elements operating at a common scanning rate, it is inherent that the elements operate as such as the element (ADC) operating at a different rate would result in an exorbitant amount of processing data for the next element (FIR filter).

Regarding claim 38 and 56, Ross in view of Dick teach all subject matter claimed, as applied to claim 34 or 52. Ross further teaches wherein the FIR filter comprises a filter bank (of having plurality of filters, see13a and 13b in Fig.6).

Regarding claim 39 and 57, Ross in view of Dick teach all subject matter claimed, as applied to claim 34 or 52. Ross further teaches wherein the analog signal processing means (18) includes an analog delay element (analog filter providing a delay, note p.2, lines 1-6).

Regarding claims 40,41,58 and 59, Ross in view of Dick teach all subject matter claimed, as applied to claim 39 or 51. Ross further teaches wherein the analog delay element provides a delay compensating the delays due to the digital filter (20). Therefore, although Ross does not explicitly disclose a constant group delay characteristic corresponding to the delay due to the converters and FIR filter, one skilled in the art would analyze that Ross teaches the equivalent concept of providing the delay at the analog delay element which provides equivalent time needed for the digital filter to process, and thus I(t) passing through the analog and digital filter would be summed up at (22).

Regarding claims 42 and 60, Ross in view of Dick teach all subject matter claimed, as applied to claim 33 or 51. Ross further teaches wherein the combining means is an analog adder (see 22 in Fig.2).

Regarding claims 43 and 61, Ross in view of Dick teach all subject matter claimed, as applied to claim 33 or 51. Ross further teaches an analog-to-digital converter (10) module connected to the combining means (22) of the power limiter.

6. Claims 44,45,62 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross et al., GB 2,222,733 A, cited in IDS, (Ross) in view of Dick et al., USP 6,600,788 B1, (Dick) and Wishart et al. USP 6,195,383 B1 (Wishart).

Regarding claims 44,45,62 and 63, Ross in view of Dick teach all subject matter claimed, as applied to claim 33 or 51. Ross teaches wherein the input signal to the analog and digital signal processing means is a continuous signal or intermediate frequency signal I(t). (note p.2) However, Ross does not explicitly teach wherein an analog preprocessing means is connected to the input of the power limiter providing a calibration signal to the input signal. Wishart teaches reception of signal wherein an analog preprocessing means (13~16 in Fig.3) is coupled to an ADC (17) providing a calibration signal (15) to the input signal. Therefore, it would have been obvious to one skilled in the art at the time of the invention to provide the analog preprocessing means outputting a lower frequency suitable to be operated by the filters taught by Ross in view of Dick for the purpose of effectively downconverting the received signal and providing the lower frequency to the next stage of filtering.

Allowable Subject Matter

7. Claims 46-50 and 64-68 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and overcome the claim objections.

8. The following is a statement of reasons for the indication of allowable subject matter: Present application discloses a method and an apparatus for processing an input signal wherein the input signal is provided to a parallel circuit comprising an analog circuitry and a digital circuitry. The outputs from the parallel circuit are summed providing a desired outcome with a suppressed frequency range in the output signal. Closest prior art, Ross teaches all subject matter claimed. However, Ross does not teach wherein the digital circuitry further comprises a first complex mixer and a second FIR filter in a third signal path, for digitally implementing an equivalent channel in which a scanning rate reduction occurs. Therefore, prior art, solely or in combination do not teach all subject matter claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn
10/1/04

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PRIMARY EXAMINER